

STUDIES ON THE GENUS APHODIUS OF THE UNITED STATES AND
CANADA (COLEOPTERA: SCARABAEIDAE) III. APHODIUS
ASSOCIATED WITH DEER DUNG IN THE WESTERN
UNITED STATES

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ABSTRACT—Six species of *Aphodius* from the western United States (*conspersus* Horn, *pectoralis* LeConte, *aleutus* Eschscholtz, *nevadensis* Horn, *schuhi*, new species, and *opacus* LeConte) are recorded as being associated with deer dung. *Aphodius schuhi* is described for the first time and *conspersus* and *Aphodius davisi* Fall are newly recorded from the Pacific Northwest.

Deer droppings are the ecological niche used by most native species of *Aphodius* inhabiting the forested areas of the eastern United States and Canada. Nearly all of the several species of *Aphodius* commonly found in cow dung are European introductions that rarely utilize deer dung. In the western United States and Canada, deer droppings usually do not have specimens of *Aphodius* associated with them, or at least there is a lack of information to that effect. This is understandable in warm, arid regions where the droppings would dry too quickly to be of use to the beetles, but I have long felt that the association of *Aphodius* with deer dung should occur in moist, forested regions such as parts of the Pacific Northwest. Jerath (1960) listed *Aphodius opacus* LeConte, *pectoralis* LeConte and *aleutus* Eschscholtz as occurring in deer dung in Oregon, and I have collected both *pectoralis* and *aleutus* in large numbers in deer droppings in the vicinity of Corvallis, Oregon. A collection containing several species of *Aphodius* was recently received from Joe Schuh, Klamath Falls, Oregon, taken in deer dung in Jackson Co., Oregon, in oak forest at Shady Cove, March 28, 1972. The species represented were: *A. conspersus* Horn (the 1st record of the species from the Pacific Northwest)², *nevadensis* Horn (this species taken also in Klamath Co., Algoma) and *schuhi*, new species (described below). *Aphodius conspersus* in particular was present in large numbers. A check of specimens in the USNM collection revealed a series of 4 specimens of *conspersus* from the San Bernardino Mts., Mill Creek Canyon, California, collected from deer dung. It is likely that both *conspersus* and *schuhi* are restricted to deer dung, but *nevadensis* has been found in a variety of habitats including the burrows of the rodent *Spermophilus beldingi*.

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² *Aphodius davisi* Fall was also represented in the Schuh material but not associated with deer dung. This is the first record for the Pacific Northwest, collected in Klamath Co., Oregon, Geary Canal, March 17, 1972, in mixed duff, collected by Joe Schuh.

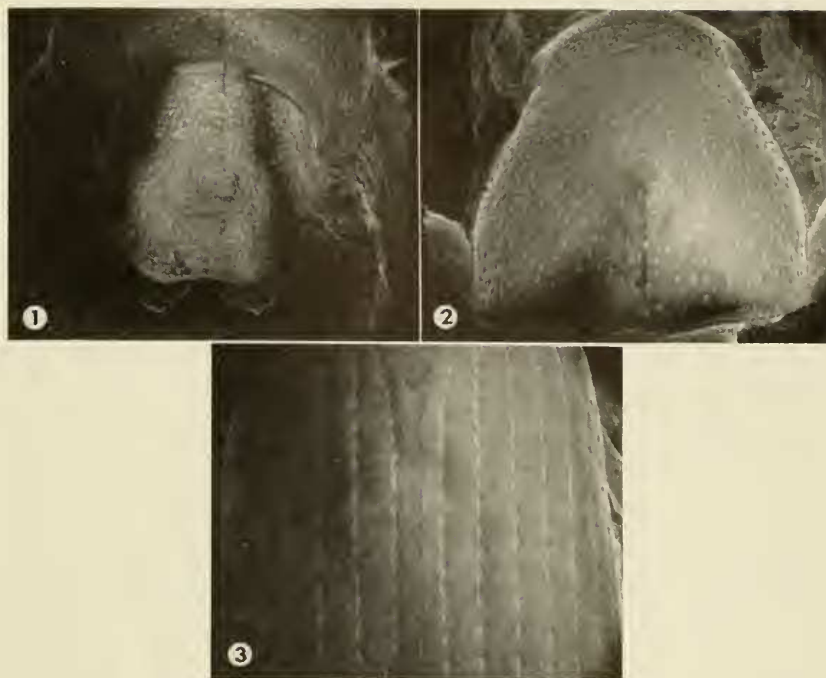


Fig. 1-3. *Aphodius schuhi*, new species. 1, head. 2, pronotum. 3, elytron (center line on head and pronotum and the dark areas are artifacts caused by specimen charging with electrons).

Aphodius opacus LeConte has also been taken under deer droppings by W. H. Tyson at Big Basin State Park, Santa Cruz Co., California, May 2, 1970, but it has also been recorded from human dung and horse dung.

The specimen photographed for the illustrations herein presented was not coated and some buildup of electrons has occurred. The center line and dark areas on the photographs are artifacts caused by this "charging." The Scanning Electron Microscope time for this paper was supported in part by the University of Maryland Center of Material Research, Department of Mechanical Engineering and Electron Microscope Central Facility, College Park, Maryland.

Aphodius schuhi Gordon, new species

Holotype: Female, length 4.6 mm, greatest width 2.1 mm. Form elongate, widest at middle of elytra. Color dark reddish brown; elytron brownish yellow. Head shiny, surface distinctly alutaceous, punctures fine, dense, separated by less than diameter of a puncture; clypeus feebly emarginate medially, anterolateral angle smoothly rounded (fig. 1). Pronotum shiny, not alutaceous, with irregular,

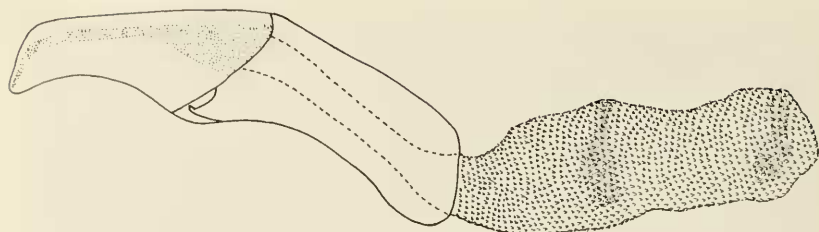


Fig. 4. *Aphodius schuhi*, new species, lateral view of male genitalia.

intermixed coarse and fine punctures (fig. 2), coarse punctures separated by less than to 3 times the diameter of a puncture, fine punctures scattered among coarse punctures; anterolateral angle rounded with small depression inside angle, lateral margin feebly explanate, strongly beaded, posterolateral angle rounded, posterior margin strongly beaded. Elytron smooth, shiny, striae definitely impressed with equally spaced, coarse, scale-bearing punctures (fig. 3), 1st interval raised, with scattered, minute punctures, intervals 2-9 feebly convex with minute, scattered punctures, lateral ridge of elytron curved upward at humerus ending with small tooth. Ventral surface mostly dull, opaque, strongly alutaceous except legs and apex of last abdominal sternum shiny; metasternum flattened, alutaceous, with coarse, dense punctures; meso- and metafemora coarsely, densely punctured. Anterior tibia with apical spur short, tapered to sharp point, curved downward in lateral view; apex of mesotibia fringed with short, unequal spines and 2 spurs, outer spur very short, $\frac{1}{2}$ as long as inner spur, bent upward at apex, inner spur nearly as long as 1st tarsal segment, slender, sinuate; apex of metatibia fringed with short, unequal spines and 2 spurs, spurs slender, acute apically, outer spur slightly shorter than inner. Anterior tarsus with segments 1-4 short, subequal, 5th segment nearly as long as 3 and 4 combined; middle and hind tarsi with basal segment nearly as long as 2-5 combined, segments 2-4 approximately equal, 5th segment nearly as long as 3 and 4 combined.

Allotype: Male, length 8.3 mm, greatest width 2.0 mm. Similar to holotype except genitalia as in fig. 4.

Type-material.—Holotype (USNM 73039) and allotype (J. Schuh collection), Oregon, Jackson Co., Shady Cove, deer manure, 3-28-72, oak forest, Joe Schuh collector.

Remarks.—In superficial appearance, the only described species from the Pacific Northwest resembling *schuhi* is *A. suspectus* Mannerheim, but *suspectus* has pubescence on the elytron, narrow elytral intervals and a slender, straight, outer spur on the middle tibia. In addition, *suspectus* occurs in ant nests, and the 2 types of *schuhi* were taken in deer droppings. The presence of a short, scalelike seta in each of the stria punctures is very unusual in species of *Aphodius* as is the extremely short, bent spur at the apex of the middle tibia. These characters readily separate *schuhi* from *congregatus* Mannerheim to which *schuhi* goes in Horn's key (1887), *Aphodius schuhi* doesn't fit satisfactorily into any of the subgenera used by Schmidt (1922),

apparently being closest to *Volinus* Motschulsky but also having characteristics of *Agoliinus* Schmidt and *Platyderides* Schmidt.

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**A CASE OF LONGEVITY OF THE BROWN PRIONID, ORTHOSOMA
BRUNNEUM (FORSTER) (CERAMBYCIDAE: COLEOPTERA)**

Reports of longevity of wood boring beetles have been numerous since the 1800's. The present case is not unusual in its time span but is presented as an aid to property owners.

A local resident brought 2 pupae and 2 undamaged larvae to my attention early in 1974 and explained their source as the pine foundation beams in his house adjacent to a patio. During construction in late 1964, the surface of this patio was sloped incorrectly and surface water drained against the foundation. Wood decay in the untreated beams was inevitable and while replacing these beams, the owner discovered these insects.

My identification of the specimens as *Orthosoma brunneum* (Forster) was confirmed by D. M. Anderson (Systematic Entomology Laboratory, USDA). Craighead (1950, USDA Misc. Publ. 657, p. 258) implies reinfestation of wooden timbers in contact with ground, but in the present case, the beams were not touching the soil. Careful examination of the untreated, infested wood, the larval galleries, and adjacent uninfested wood showed no evidence of more than the present generation. Inasmuch as this species is not known to infest finished lumber, field infestation of the logs from which these beams were sawed is theorized to have occurred from adult flights during the summer or fall of 1964. The excessive moisture in the wood caused by improper drainage from the patio apparently kept the moisture content in these beams sufficiently high to enable these insects to continue their development on into 1974. Normally they would have died some years earlier as the moisture content of the wood lowered naturally.

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